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EXAMINER	
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,539	TOYAMA ET AL.	
	Examiner	Art Unit	
	Eric Woods	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-15,37-42,44,46 and 47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-15,37-42,44,46 and 47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/13/2006 has been entered.

Information Disclosure Statement

The information disclosure statement filed 13 April 2006 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

Response to Arguments

Currently, claims 1-7, 9-15, 37-42, and 44 of the original claims remain pending. Claims 46-47 were added.

All rejections against canceled claims stand automatically withdrawn.

Applicant's arguments, see Remarks pages 1-13 and claim amendments, filed 4/13/2006, with respect to the rejection(s) of claim(s) 1-15, 37-42, and 44-45 under various statutes have been fully considered and are persuasive.

The rejections of claim 44 under 35 USC 112, first, second, and sixth paragraphs, stand withdrawn in view of applicant's amendments, and the clarification by applicant of what portions of the specification and drawings provide enablement and means for the recited claim elements.

The rejections of claims 1-7, 9-15, 37-42, and 44 under 35 USC 103(a) stand withdrawn in view of applicant's amendments to the claims.

However, upon further consideration, a new ground(s) of rejection is made in view of various references as set forth below.

It is noted that applicant's amendments have shifted the focus of the invention from the HDR viewing itself to the UI associated with said viewer, and that the majority of the claim now revolves around such elements.

It is further noted that applicant's Figure 6 clearly shows that four different views or versions of the **same exact image** can be shown in the split-pane mode, where the only difference is in which HDR image is shown in each (the exemplary Figure 6 illustrates four version of one image that have different **exposure levels**).

Stipulations

The McGraw-Hill Science and Technology Encyclopedia states, *inter alia*, in the image processing article (McGraw):

Another example of enhancement is contrast manipulation, where each pixel's value in the new image depends solely on that pixel's value in the old image; in other words, this is a point operation. Contrast manipulation is commonly performed by adjusting the brightness and contrast controls on a television set, or by controlling the exposure and development time in printmaking. Another point operation is that of pseudocoloring a black-and-white image, by assigning arbitrary colors to the gray levels. This technique is popular in thermography (the imaging of heat), where hotter objects (with high pixel values) are assigned one color (for example, red), and cool objects (with low pixel values) are assigned another color (for example, blue), with other colors assigned to intermediate values.

Thusly, it is well known in the art that adjusting contrast constitutes changing exposure times, changing brightness and contrast, and the like (e.g. changing luminance values, exposure times, et cetera).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

Claim 47 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 47 recites in the last clause that the first image segment is displayed in the same manner as specified in the middle clause in response to a user input. That does not make sense, given that the image is initially displayed in the same format – there would be no change. It is unclear what the change is supposed to be –

examiner believes (and is interpreting the claim) as requiring that the first image segment change to the second image segment for purposes of prior art rejections of said claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4, 14, 37-38, 40, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US PGPub 2005/0185055 A1) in view of Goodwin (US 5,818,975 A, used in previous Office Actions), Kim et al (US PGPub 2004/0125124 A1), and OpenEXR (Industrial Light & Magic, "OpenEXR: About OpenEXR". 2pp (see applicant IDS)).

As to claims 1, 15, and 44, (method, CPP, and system ('means') respectively. Note the additional clause to address the hardware elements in claim 44)

Miller teaches or suggests the following limitations:

In a computer system, a method of displaying high dynamic range digital images on a display, the method comprising: (Miller [0059-0060] states that the invention can be provided on a personal computer, kiosk, or the like)

-Receiving high dynamic range image information, wherein the high dynamic range image information defines a high dynamic range image; (Miller provides versions of the same image with different levels of contrast and the like [0057-0058], where this is described as a **range** of contrasts [0035])(That is, Miller does not expressly teach HDR images, but clearly would suggest such a limitation)

-Receiving split-pane view information, the split-pane view information defining two or more image regions of the high dynamic range image; and (Miller Figures 3A-3B, [0057]: "...Alternatively, a single image may be displayed in a split-screen mode, where part of the image (e.g. the left half of the image) is processed using normal default settings and algorithms, and another part (e.g. the right half of the image) is processed using alternative settings or algorithms...". Specifically, Miller provides multiple (simultaneous) views of an image subjected to various processing, particularly **different levels of contrast**, where it is well known in the art (see ***Stipulations*** section above) that contrast processing involves effects such as show varied exposure levels and the like. Therefore, Miller teaches the split-pane view information, and suggests having the same image at different contrast levels in a split-screen mode, which is comparable to the applicant's Figure 6 cited in the specification)

-Displaying a derived image comprising: (Miller clearly displays images, Figures 3A-3B, [0057-0060], where clearly such images (different levels of contrast [0058]) constitute

'derived images', and in [0035], where the various images 222A-222E in Figures 3A-3B may have a **range of contrasts**)

-A first image region constructed from a first portion of the high dynamic range image information; and (Miller [0057] – information on the left half is one version of the image)

-A second image region construction from a second portion of the high dynamic range image information, the second region displayed in accordance with at least one display parameter that differs from a corresponding display parameter for the first image region; (Miller [0057], the part of the image on the right side of the screen is clearly processed using alternative settings or algorithms (e.g. **different contrast levels**, see also [0035]), see Figures 3A-3B, where this clearly would constitute a region that has a different display parameter from the first image (or different exposure times))

Miller does not teach the following limitations, but the Kim reference does, as below.

-Wherein the split-pane view information comprises at least one movable split position; and (Kim Figure 16 and [0237]: "The relative length of the split windows 1604 and 1606 can be adjusted by sliding the separator bar 1608 along the horizon...")

-Wherein a change in the movable split portion results in a change of the first portion of the high dynamic range image information from which the first image region is constructed, and a change of the second portion of the high dynamic range information from which the second image region is constructed. (Kim teaches and suggests this limitation Figure 16 [0237] - Further, Kim clearly states in the cited portions that the "relative length" of the split window is changed, such that this clearly constitutes a

'change in the movable split portion'. It would be obvious that when the change in the movable split portion occurs, the images on each side of the display would be resized as appropriate to fill the screen, since this is what happens with the movable split portion, where clearly a resizing constitutes 'a change' in the portion of the information.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Miller with Kim because the system of Kim allows the user to perform multiple [edit] operations at once and allows the user to become more efficient by changing the relative viewable lengths of the item under examination [0237]. Miller, whilst not an analogous art, is directed to the same problem solving area, namely that of optimizing user interface functionality to allow the user to be more productive, and as noted in the Response to Arguments section above, the current claims are directed more at the UI than anything else.

Miller and Kim do not expressly teach the following limitation, but the OpenEXR reference does teach this limitation:

-Receiving high dynamic range image information, wherein the high dynamic range image information defines a high dynamic range image; (OpenEXR teaches HDR images that have high dynamic ranges, and shows different versions of the same image at different exposure levels – specifically, on pages 1-2 it specifies that one of the virtues of the OpenEXR file format is that it holds over-range values: "Preserving over-

range values in the source image allows an artist to change the apparent exposure of the image with minimal loss of data, for example")

Miller clearly suggests processing an image and showing different version having different levels of contrast side by side (Figures 3A-3B, [00356-0036,0057-0060]), but does not expressly say that such images are HDR. OpenEXR clearly provides that having a HDR image makes this easier, in that different levels of exposure (e.g. contrast, where the two terms are well known in the art to be comparable, at least when discussing and in the context of photographic digital images-see McGraw above (as provided for evidence purposes in the Stipulations section)) can be shown with no loss of data (page 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Miller/Kim with OpenEXR such that the system of Miller could provide multiple images with wider ranges of contrast / exposure from which the user could choose.

As to claim 44, the system of Miller has display means, CPU, and the like, as illustrated in Figure 5, where also the Miller reference specifies that a PC or other similar system could be used [0059]. (Display means = display 374, processing means = processor 364, storage or program means = firmware stored in firmware memory 370, executed by processor 364, the program elements are the same as above). The rejection to claim 1 is incorporated by reference in its entirety. Note also that Kim teaches the use of a mouse to adjust the split window.

As to claim 2, clearly the system of Miller would have an initial position of the movable position slider as provided by the system of Kim, and Kim would clearly allow the user to set such an initial position since the user adjusts the split window position indicator anyway.

As to claim 3, Miller at least suggests that the user would be able to choose the desired contrast parameters whilst the OpenEXR reference directly says that the artist can select the desired exposure level(s), where the side by side placement of several versions of the image reveals critical details (see OpenEXR page 1, where the different versions of the image show Darth Vader in one version and not in another). Therefore, clearly the user is able to specify the desired contrast or exposure levels of the different images to be shown.

As to claim 4, the OpenEXR file format is an HDR image (a single file) as discussed therein.

As to claim 14, repeating the steps of a process for multiple items (e.g. different images) is merely repeating a process, which according to In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), is not a patentable distinction, as it does not produce a different result.

As to claim 37, Miller teaches the following (but does not teach HDR image):

-A processor (Processor 364, Figure 5)

-A storage having stored therein computer-executable instructions (Firmware memory 370, Figure 5) to implement a high dynamic range image viewer operable to output to a display (Display 374, Figure 5) an image view comprising plural image regions

(applicant's specification and Figure 6; such images can be different versions of the same image)(Miller Figures 3A and 3B, the different images) constructed from high dynamic range information (different contrast levels [0035-0036,0057-0058]), the image view based at least in part on split-pane viewing information ([0057], such items can be viewed in split screen mode)

-Wherein a first image region of the plural image regions is displayed in accordance with at least one display parameter that differs for a corresponding display parameter for a second image region of the plural image regions; (Miller [0057], the part of the image on the right side of the screen is clearly processed using alternative settings or algorithms (e.g. **different contrast levels**, see also [0035]), see Figures 3A-3B, where this clearly would constitute a region that has a different display parameter from the first image (or different exposure times))

Kim teaches the following limitations:

--Wherein the split-pane view information comprises at least one movable split position; and (Kim Figure 16 and [0237]: "The relative length of the split windows 1604 and 1606 can be adjusted by sliding the separator bar 1608 along the horizon...")

-Wherein a change in the movable split portion results in a size change of at least the first and second image regions. (Kim [0237] clearly shows that the size of the various image regions change when the position slider is adjusted or moved.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Miller with Kim because the system of Kim allows the user to perform multiple [edit] operations at once and allows the user to become more efficient by changing the relative viewable lengths of the item under examination [0237]. Miller, whilst not an analogous art, is directed to the same problem solving area, namely that of optimizing user interface functionality to allow the user to be more productive, and as noted in the Response to Arguments section above, the current claims are directed more at the UI than anything else.

Miller and Kim do not expressly teach the following limitation, but the OpenEXR reference does teach this limitation:

-Receiving high dynamic range image information, wherein the high dynamic range image information defines a high dynamic range image; (OpenEXR teaches HDR images that have high dynamic ranges, and shows different versions of the same image at different exposure levels – specifically, on pages 1-2 it specifies that one of the virtues of the OpenEXR file format is that it holds over-range values: "Preserving over-range values in the source image allows an artist to change the apparent exposure of the image with minimal loss of data, for example")

Miller clearly suggests processing an image and showing different version having different levels of contrast side by side (Figures 3A-3B, [00356-0036,0057-0060]), but does not expressly say that such images are HDR. OpenEXR clearly provides that having a HDR image makes this easier, in that different levels of exposure (e.g.

contrast, where the two terms are well known in the art to be comparable, at least when discussing and in the context of photographic digital images-see McGraw above (as provided for evidence purposes in the Stipulations section)) can be shown with no loss of data (page 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Miller/Kim with OpenEXR such that the system of Miller could provide multiple images with wider ranges of contrast / exposure from which the user could choose.

As to claim 38, clearly Miller has a display monitor 374 in Figure 5.

As to claim 40, clearly Miller has a UI software module, since the system of Miller operates in firmware – see Figure 6, module 370 'firmware memory' and claims 1-10, and firmware consists of low-level software modules.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as unpatentable over Miller, Kim, and OpenEXR as applied to claim 1 above, and further in view of Inuiya (US 6,597,468 B1).

As to claim 5,

Miller and Kim do not expressly teach that the digital information comes from a plurality of files. However, Inuiya clearly teaches in Figures 5 and 10 that multiple images may be used to capture high dynamic range information (4:45-65), where the tags contain the dynamic range information such that the system will be able to combine

them (5:11-35) into one image, where the user may preview (5:45-6:25) the result and combine multiple wide-dynamic-range images.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Miller, Kim, and OpenEXR in view of Inuiya to allow the user to combine multiple images having different dynamic ranges that are of the same object to merge the images to generate the desired resultant image, since Goodwin allows the user to handle two different areas of an image with different dynamic ranges anyway, where when the two images were merged the user would be able to choose different regions to modify, and to generate a final output image as taught in Inuiya.

As to claim 6, Inuiya clearly teaches that the different images to be combined into one image have different dynamic ranges and are taken under different exposure conditions. Further, it is notoriously well known in the art of photography that the main way to create HDR images (see Debevec et al) is to take a series of images of the same scene under different exposure conditions and then to merge them. Therefore, by definition the HDR image so formed will have a wider range than that of the constituent base images.

As to claim 7, as noted in the rejection to claim 5 above, clearly the images will have **different** dynamic ranges, because otherwise there would be no need to combine them as per Inuiya.

Claims 9-10 are rejected under 35 USC 103(a) as unpatentable over Miller, Kim, and OpenEXR as applied to claim 1, further in view of Photoshop.

References Miller, Kim, and OpenEXR do not expressly teach these limitations.

As to claim 9, Photoshop clearly teaches on page 267 that geometric transformations can be applied to portions of an image – e.g. rotate, scale, flip, effects, image size (zoom), et cetera. As an example, Figure 7-1 on page 268 clearly shows some of these changes, with the caption listing various transforms that have been applied to various portions of the shown images. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Photoshop with Miller/Kim/OpenEXR so as to allow the user to configure the image as desired and to alter it. Motivation for the modification would be to allow the user more control over the selected ranges and brightness adjustments. Photoshop also clearly teaches that the user can adjust colors, transparency, brightness, and the like.

As to claim 10, Photoshop (pages 453-457) teaches various blending methods that combine multiple layers in an image. Photoshop teaches that images are formed of various layers, in that each modification of an image can be done on a separate layer so that it can be rolled back, removed, or otherwise changed before the layers are finally merged or blended together. Clearly, as on page 61, the separate image could be on a separate layer and then be blended or combined with the main image as set forth on pages 453-457. Motivation and rationale are taken from the above rejection to claim 9.

Claim 11 is rejected under 35 U.S.C. 103(a) as unpatentable over Miller, Kim, and OpenEXR as applied to claim 1 above, and further in view of Durand et al (Frédo

Durand and Julie Dorsey, "Fast Bilateral Filtering for the Display of High-Dynamic-Range Images.") and Photoshop.

As to claim 11, Miller, Kim, and OpenEXR do not expressly teach this limitation. Reference Durand teaches in section 2 (page 258) that tone-mapping parameters are varied across a local object (e.g. a region selected by the user or similar that has a different parameter than the background image), and further in section 4 on page 260, in the right columns, equations 9 and 10 provide a basis of equations to be solved to distribute a tone map across a local object or surface so that better distribution of color takes place, and clearly the tone map parameters can be varied by changing the coefficients in the equations (see for example sections 3.1 and 3.2 on pages 258-259). Therefore, those filtering techniques (see page 261 – section 5) clearly can be used to vary tone mappings across a surface. Now, clearly these constitute another class of filters that normally can be applied to HDR images. Clearly, Photoshop teaches that filters can be applied to objects, regions, and layers, and furthermore that external plug-ins and filters can be imported, such that the filters of Durand could be added to Photoshop in order to give it faster rendering compared to other techniques – in section 6.1 (page 263) Durand teaches that their techniques are much faster than previous methods, which would be an obvious motivation to combine with Photoshop – also the techniques of Durand are derivations and improvements on Gaussian blur techniques (section 1.1, page 258, sections 3.1 and 3.2, pages 259-260 among other locations), which would be obvious to augment Photoshop with, since Photoshop uses Gaussian blur filters (on page 364). It would have been obvious to one of ordinary skill in the art

at the time the invention was made to combine Photoshop with Miller/Kim/OpenEXR so as to allow the user to configure the image as desired and to alter it. Motivation for the modification would be to allow the user more control over the selected ranges and brightness adjustments. Photoshop also clearly teaches that the user can adjust colors, transparency, brightness, and the like.

Claims 12, 42, and 44 are rejected under 35 U.S.C. 103(a) as unpatentable over Miller, Kim, and OpenEXR as applied to claims 1 and 37, and further in view of Estrada et al (US PGPub 2003/0142126 A1).

As to claim 12, Miller, Kim, and OpenEXR do not expressly teach this limitation. It is trivially well known in the art to use cached parameters in order to speed up processing of images, and since the parent claim receives data (e.g. high dynamic range image) from somewhere, the techniques in Estrada that are designed to make images load faster (e.g. by storing certain parameters concerning them locally) are clearly relevant. Estrada teaches that images are cached and that their parameters are stored in a database such that even if the image is not cached *per se*, the parameters are cached in the database, such that they can be retrieved if necessary [0058]. Clearly, this technique would be relevant to the same problem solving area as applicant's work, as both are directed towards systems that retrieve and manipulate images and allow a user to browse one or more such images, and further as stated above the reliance on cached parameters is a standard technique in engineering and computer science that is known to speed up performance in almost any circumstances

because it minimizes retrieval time and as such all of the above provides the motivation for combination and obviousness as set forth above.

As to claim 42, it is substantially the same as claim 12, the rejection to which is herein incorporated by reference, wherein as set forth in the rejection immediately above Estrada teaches that the images are stored in an image cache, which clearly meets the recited limitations of the claim. Motivation and combination is also taken from claim 12 above, which is appropriate given that the parent claim 37 is merely a broader version of the parent claim 1 for claim 12, as explained therein.

As to claim 46, this limitation consists of increasing the number of regions to four, with changes in the split position affecting them in the same way. Therefore, it is merely a duplication of parts (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)), where the court held that the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced (MPEP 2144.04). In this case, no new or unexpected results resulted.

Claim 13 is rejected under 35 U.S.C. 103(a) as unpatentable over Miller, Kim, and OpenEXR as applied to claim 1 above, and further in view of Kurashige et al (US 6,219,459).

Miller, Kim, and OpenEXR do not expressly teach the limitation of this claim. Kurashige teaches a controller that allows the user to adjust parameters concerning the conversion of an input image to a linear drawing style in real-time (4:20-33). Clearly, the idea is very similar in concept to rendering languages and systems (such as

RenderMAN™ by Pixar™), which allow real-time control over image parameters as they are generated. Kurashige further teaches in 1:45-67 that the system allows for real-time processing of areas having large differences in contrast (e.g. light level, lamp light and shade are cited as one example). Clearly, the system of Kurashige would allow easier extraction of the region of interest, wherein such a region having a different exposure could then easily be transformed in real time. The Kurashige reference is clearly analogous art, as it is related to image processing, where the above references do so.

Real-time control of graphical output is well known in the art, see for example Doerry et al (US 6,424,287 B1)(The system allows the user to make corrections to the data in real time in Fourier space, that is, to adjust the parameters for real-time visualization (4:8-35, 7:60-8:10 among other locations)), Azordegan et al (US 6,770,879, page 3, cols 5-35), Chun et al (US PGPub 2004/0184059 A1)(see [0003, 0029, 0051]), etc., all of which clearly relate to image processing and manipulating the output of graphical systems manually in real-time, which is clearly directed to the same problem-solving area as applicant. Motivation to combine Miller, Kim, and OpenEXR with Kurashige is taken from the fact that real-time control allows the user instantaneous feedback on how the changes they are effecting change the results, which always allows the user more flexibility, particularly when it comes to graphical applications, this is prima facie obvious and well known in the art (see Doerry et al, Azerdogan et al, Chun et al, etc, as cited above as evidentiary support), and it would allow Miller/Kim/OpenEXR to perform filtering operations in hardware at a much faster rate,

and it would be much cheaper and faster than other hardware accelerators, and allow many users to utilize it thereof (see Kurashige 4:20-33).

Claim 39 is rejected under 35 U.S.C. 103(a) as unpatentable over Miller/Kim/OpenEXR as applied to claim 38 above, and further in view of Lofgren et al (US PGPub 2002/0154144 A1).

References Miller/Kim/OpenEXR do not, per se, teach this limitation expressly. Miller at least suggests it, since Miller creates several versions of the same image and shows them to the user.

Reference Lofgren teaches that a user may create derivative images as shown in Fig. 2 and elaborated upon in [0039] using user terminal 18. Clearly, the user terminal or computer system 18 prima facie contains a derived image-constructing module implemented in software [0039]. The system of Lofgren teaches that digital watermarks are embedded into images in such a way as not to occlude their viewing or affect their visual context [0008-0011], so that owners of such images can control their use, distribution, security, classification, et cetera [0031, 0057]. Clearly, any image thusly processed can have such information embedded into it, e.g. images processed with Miller/Kim/OpenEXR as set forth above. Clearly, the addition of such capabilities would improve the systems of Miller/Kim/OpenEXR and provide obvious motivation for combination so that adequate controls over image classification, distribution, and the like, could be maintained.

Claim 41 is rejected under 35 U.S.C. 103(a) as unpatentable over Miller/Kim/OpenEXR as applied to claim 37 above, and further in view of Fukuhara et al (US 6,546,144 B1).

References Miller, Kim, and OpenEXR do not in of themselves expressly suggest this particular limitation, although reference Photoshop does teach splitting an image into color channels on pages 61-62, such that each channel can be viewed separately. Fukuhara teaches in Fig. 8 for example the display of various thumbnails of images after the processing discussed in 2:25-35 wherein the image is split into bands, wherein an intermediate image is formed after the band processing and can be shown to the user as a thumbnail as in Fig. 8 (8:10-17). Clearly, this constitutes forming an intermediate image as recited in the claim. The thumbnails so generated would be useful in their own rights for obtaining a better understanding of the frequency content of the components of the overall image.

As set forth in Fukuhara 11:22-39, the system can generate intermediate images to facilitate compression of the original image for transmission and storage purposes, and it is obviously applicable to digital still images on digital still cameras as stated. Clearly, a system that allows for more effective compression and storage of images would clearly be desirable in combination with Miller, Kim, and OpenEXR because it would allow more images to be processed and stored for use with those programs; this is also trivially well known in the art. The thumbnails so generated would be useful in their own rights for obtaining a better understanding of the frequency content of the

components of the overall image. Thusly, it would have been obvious to combine the images of Miller, Kim, and OpenEXR with the system of Fukuhara.

Claim 47 is rejected under 35 USC 103(a) as unpatentable over Miller and HDRView and OpenEXR.

Miller teaches the following limitations:

-Receiving image segment information that defines two or more image segments in the high dynamic range image; (Miller Figures 3A, 3B, [0057], different version of the image can be displayed in split screen mode)

-Display a first image segment constructed from high dynamic range information and the image segment information, the first image segment displayed in accordance with the at least one display parameter that differs from a corresponding display parameter for a second image segment; (Miller [0057], the images can displayed one at a time, where they have different contrast levels [0035,0058], Figures 3A-3B, which therefore is a 'first image segment displayed in accordance with the at least one display parameter', e.g. contrast)

-Wherein the first image segment is displayed in accordance with the at least one display parameter that differs from the corresponding display parameter for the second image segment in response to passing a cursor over the first image segment. (Miller states in [0057] that the images can be sequenced or moved through by using user controls to do so).

Miller does not expressly teach the HDR image limitation or the cursor but HDRView and OpenEXR does.

-Receiving high dynamic range information for a high dynamic range image; (HDRView takes in a HDR file; OpenEXR teaches a file format that contains HDR information) Specifically, HDRView is a software program for a personal computer that has a mouse (thusly allowing use of the cursor), where such program allows the user to perform such tasks as changing the exposure level of the image, and the like. A mouse clearly has a cursor, and thusly it would have been obvious to one of ordinary skill in the art that since the system of Miller can be implemented on a personal computer, workstation, or the like [0059-0060] that a mouse could be used to change the cursor, since the mouse in HDRView can pan, zoom, and the like.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Miller to take and use HDR images, since they have a plurality of advantages, such as being able to change the exposure without having to take new images (OpenEXR pages 1-2, statement that the artist can change exposure levels; HDRView, user can change exposure levels; contrast is equivalent to exposure level in the case of photography).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric Woods

August 25, 2006

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER